

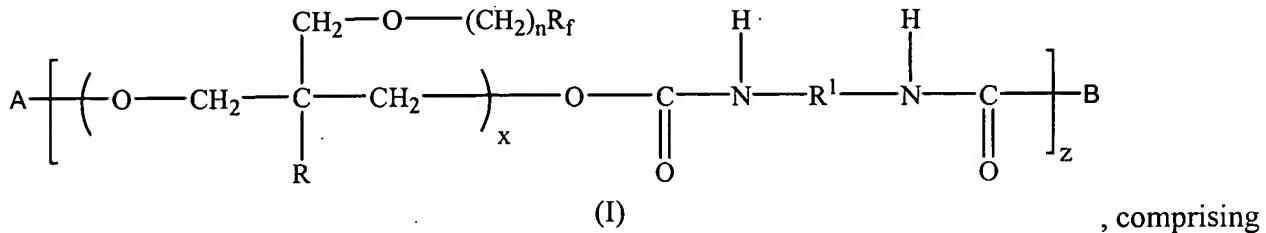
#### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

**Claims 1-19 (canceled)**

- 1 20 (new): A fluorinated thermoset polyurethane elastomer represented by the  
2 formula (I):



3 (I) , comprising  
4 a polyether segment; a polyisocyanate unit covalently bonded to the polyether segment; and a  
5 cross-link formed from a cross-linking agent,

1 wherein:

2 n is from 1-3;

3 R is independently selected from the group consisting of methyl and ethyl;

4 R<sub>f</sub> is independently selected from the group consisting of perfluorinated alkyls

5 having from 1 to about 20 carbons and oxa-perfluorinated polyethers having from about 4 to  
6 about 20 carbons;

7 X is a variable integer from about 10 to about 250;

8 Z is a variable integer from 2 to about 50

9 R<sup>1</sup> is a divalent hydrocarbyl radical;

10 A is an end-group selected from the group consisting of H and an isocyanate  
11 fragment; and

B is an end-group selected from the group consisting of a fragment having an OH and an isocyanate fragment.

1           21 (new): The fluorinated thermoset polyurethane elastomer of claim 20,  
2 wherein the cross-linking agent is selected from the group consisting of a low molecular weight  
3 polyol and a low molecular weight polyamine.

1           22 (new): The fluorinated thermoset polyurethane elastomer of claim 20,  
2 wherein the crosslinking agent is selected from the group consisting of trimethylolpropane,  
3 pentaerythritol, trimethylolethane, triethanolamine, 1,4-butanediamine, xylene diamine,  
4 diethylenetriamine, methylene dianiline, diethanolamine and combinations thereof.

1           23 (new): The fluorinated thermoset polyurethane elastomer of claim 20,  
2 wherein the polyether segment is produced from at least one monomer selected from the group  
3 consisting of 3-(2,2,3,3,4,4,5-heptafluorobutoxymethyl)-3-methyloxetane; 3-(2,2,2-  
4 trifluoroethoxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,8-  
5 tridecafluoroctyloxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-  
6 heptadecafluoroctyloxymethyl)-3-methyloxetane; and 3-  
7 (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosa-fluorododecyloxymethyl)-3-  
8 methyloxetane.

1           24 (new): The fluorinated thermoset polyurethane elastomer of claim 20,  
2 wherein the polyisocyanate unit is produced from an isocyanate selected from the group  
3 consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-  
4 methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), toluene diisocyanates,  
5 saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), trimethylhexane  
6 diisocyanate and combinations therof.

1           25 (new): A method of making a fluorinated thermoset polyurethane elastomer,  
2 comprising the steps of:  
3           a)       mixing a prepolymer with an isocyanate, a cross-linking agent, and a  
4 catalyst to form a reaction mixture, wherein the prepolymer is produced from a monomer

5 selected from the group consisting of FOX (fluorinated OXetane) and FOX/THF  
6 (tetrahydrofuran); and  
7 b) curing the reaction mixture to form the thermoset polyurethane elastomer.

1 26 (new): The method of claim 25, further comprising the steps of casting the  
2 reaction mixture into a mold; and degassing the cast reaction mixture after step a).

1 27 (new): The method of claim 25, wherein the mixture is cured at a temperature  
2 between about 20°C to about 150°C.

1 28 (new): The method of claim 25, wherein the reaction mixture is heated to  
2 about 65 °C for about 3 to about 16 hours.

1 29 (new): The method of claim 25, wherein the isocyanate is selected from the  
2 group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-  
3 methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), toluene diisocyanates,  
4 saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), trimethylhexane  
5 diisocyanate and combinations thereof.

1 30 (new): The method of claim 25, wherein the cross-linking agent is selected  
2 from the group consisting of a low molecular weight polyol and a low molecular weight  
3 polyamine.

1 31 (new): The method of claim 25, wherein said crosslinking agent is selected  
2 from the group consisting of trimethylolpropane, pentaerythritol, trimethylolethane,  
3 triethanolamine, 1,4-butanediamine, xylene diamine, diethylenetriamine, methylene dianiline,  
4 diethanolamine and combinations thereof.

1 32 (new): The method of claim 25, wherein the catalyst is a member selected  
2 from the group consisting of dibutyltin dilaurate, triethylamine, triethylene diamine, triphenyl

3 bismuth, chromium acetylacetone, lead octonate, ferric acetylacetone, tin octanoate and  
4 combinations thereof.

1 33 (new): A method of making a fluorinated thermoset polyurethane elastomer,  
2 comprising the steps of:

3 a) mixing a prepolymer with an isocyanate, a cross-linking agent, a catalyst  
4 and a solvent to form a reaction mixture, wherein the prepolymer is produced from a monomer  
5 selected from the group consisting of FOX (fluorinated OXetane) and FOX/THF  
6 (tetrahydrofuran); and

7 b) curing the reaction mixture to form the thermoset polyurethane elastomer.

1 34 (new): The method of claim 33, further comprising the step of applying the  
2 reaction mixture onto a surface or into a cavity after step a).

1 35 (new): The method of claim 33, wherein the curing is performed at a  
2 temperature between about 20°C to about 150°C.

1 36 (new): The method of claim 33, wherein the isocyanate is selected from the  
2 group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-  
3 methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), toluene diisocyanates,  
4 saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), trimethylhexane  
5 diisocyanate and combinations thereof.

1 37 (new): The method of claim 33, wherein the cross-linking agent is selected  
2 from the group consisting of a low molecular weight polyol and a low molecular weight  
3 polyamines.

1 38 (new): The method of claim 33, wherein said crosslinking agent is selected  
2 from the group consisting of trimethylolpropane, pentaerythritol, trimethylolethane,  
3 triethanolamine, 1,4-butanediamine, xylene diamine, diethylenetriamine, methylene dianiline,  
4 diethanolamine and combinations thereof.

1           39 (new): The method of claim 33, wherein the catalyst is a member selected  
2         from the group consisting of dibutyltin dilaurate, triethyamine, triethylene diamine, triphenyl  
3         bismuth, chromium acetylacetone, lead octonate, ferric acetylacetone, tin octanoate and  
4         combinations thereof.

1           40 (new): The method of claim 33, wherein the reaction mixture is heated to  
2         about 65°C for about 3 to about 16 hours.

1           41 (new): The method of claim 33, wherein the solvent is selected from the  
2         group consisting of tetrahydrofuran (THF), carbon tetrachloride, chloroform, trichloroethylene,  
3         chlorobenzene, ethyl bromide, dichloroethane, fluorinated solvents, sulfur dioxide, hexanes,  
4         petroleum ether, toluene, dioxane, xylene, methylene chloride, Freon and mixtures thereof.